BEVERAGES

426/29

1883

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7. BREWING & FERMENTING
MASHING.

RECORDED

A.D. 1883, 21st *February.* N° 957.

Brewing Process and Arrangement of Apparatus for the Continuous Working of the same.

(*This Invention received Provisional Protection only.*)

PROVISIONAL SPECIFICATION left by Edwin Powley Alexander at the Office of the Commissioners of Patents on the 21st February 1883. Communicated to him from abroad by Conrad Zimmer of Frankfort-on-the-Main in the Empire of Germany

Edwin Powley Alexander of 36 Southampton Buildings in the County of Middlesex Fellow of the Institute of Patent Agents "AN IMPROVED BREWING PROCESS AND ARRANGEMENT OF APPARATUS FOR THE CONTINUOUS WORKING OF THE SAME"—a communication to me from abroad by Conrad Zimmer of Frankfort-on-the-Main in the Empire of Germany

The characteristic features of the herein described improved brewing process consist mainly in the use of malt from which the useless parts have been previously removed by any suitable or well known decorticating apparatus and which malt thus treated and when ground fine can be separated into two qualities a darker and a lighter, also in the separation of the albumen from the worts by centrifugal action.

By this process a produce is obtained which is always uniform in quality and which is not affected by the greater or less attention of the operators.

The malt meal is mashed in a closed vessel with water of ordinary temperature; and under continuous stirring at a certain vacuum, the mash is brought to the temperature of saccharification, at which it is kept for a certain time.

After this, for strong beers the whole of the mash is boiled, while for weaker beers only a part thereof is boiled; and after a certain time it is reduced to the required temperature of 75° Centigrade or say 167° Fahrenheit and is then conveyed into the centrifugal machines of known construction. The difference of specific gravity between the liquid and solid components of the mash permits of the most perfect separation thereof by centrifugal action.

The separated albumen has only a very small degree of humidity and the worts which are conveyed from the centrifugal machine to the hop vat have considerable brightness.

Three or more vessels serve to receive the mash; they are provided with a charging opening closed by a cover, through which the malt meal is introduced

[*Price* 2*d.*]

together with cold water through a preliminary mashing apparatus. The quantity of water is so proportioned to that of the malt that the mash forms a more or less thick paste. The first mash vessel is first charged and after being effectually closed a vacuum of about 60 centimeters or say $23^1/_2$ inches is produced therein by any suitable means through a pipe connected with the said vessel. While this exhaust is being produced the temperature of the mash is raised by the admission of steam and other heating media into a steam jacket surrounding the vessel but only to a degree below that at which the diastase would be destroyed. The mash is maintained at the saccharification temperature for about one hour and is then boiled for about another hour and passes at the saccharification temperature by suitable pipes and cocks from this first vessel to a centrifugal apparatus. The worts which are here separated pass from this apparatus to the hopvat which is however sufficiently large to take up the contents of two mashing vessels. Consequently for a larger production a mash charge is filled into the second vessel when the charge of the first is being boiled and is caused to pass through the above processes. As soon as the charge of the second vessel is being boiled a charge is admitted to the third vessel so that when the charge of the first is cleared that of the second is ready for centrifugal action. The hop pan is filled after about two hours from the commencement of the centrifugal action the worts having the same concentration as the original worts, as in the centrifugal action no rinsing is necessary, and according to the concentration of the original worts, they are diluted to the required per centage with boiling water. While now the concentrated worts of the two first mashing vessels are being boiled the contents of the two following mashing vessels are run into a second hop pan and when the first named hop pan is discharged hop pan N° 2 is charged and a mashing vessel is again ready to have its contents treated in hop pan N° 1. The stirring apparatus contained in the mashing vessels consists of a rotating shaft with curved arms which revolve between fixed bars. The inclined surfaces of the arms always force the mash towards the bottom of the vessel by which means a perfectly intimate mixture of the malt meal with the water is effected. By preventing the mash from having the opportunity of forming lactic acid and preventing the destruction of the diastase overheating being impossible and as in the clearing of the worts the temperature does not sink below the saccharification temperature and furthermore by preventing the addition of impurities to the mash by means of rinsing water and by at once bringing it to boiling point in the hop pan which can also be heated by a steam jacket it is possible with this brewing process and apparatus to obtain an almost chemically pure wort. The oxygen which the wort requires for later fermentation can be added in various ways either in the hop pan or in the cooling process. For the operation of clarification centrifugal apparatus may be used with either perforated or solid drums.

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